PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

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APR 23 2002

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing (day/month/year)	12 APR 2002

Applicant's or agent's file reference	IMPORTANT NOTIFICATION
2313.2001003	

International application No.	International filing date (day/month/year)	Priority Date (day/month/year)
PCT/US01/01963	18 JANUARY 2001	19 JANUARY 2000

Applicant
MOSAIC TECHNOLOGIES

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/US	Authorized officer
Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	JOHN S. STARSIAK JR.
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2313.2001003	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US01/01963	International filing date (day/month/year) 18 JANUARY 2001	Priority date (day/month/year) 19 JANUARY 2000
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant MOSAIC TECHNOLOGIES		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
08 AUGUST 2001	20 MARCH 2002
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer JOHN S. STARSIAK JR.
Facsimile No. (703) 305-3230	Telephone No. (703) 308-1797

Form PCT/IPEA/409 (cover sheet) (July 1998)★

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/01963

I. Basis of the report

1 With regard to the **elements** of the international application:*

[X] the international application as originally filed

[X] the description:
pages 1-51 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of

[X] the claims:
pages 52-62 , as originally filed
pages NONE , as amended (together with any statement) under Article 19
pages NONE , filed with the demand
pages NONE , filed with the letter of

[X] the drawings:
pages 1-27 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of

[X] the sequence listing part of the description:
pages NONE , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[ ] the language of publication of the international application (under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained in the international application in printed form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form.

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] The statement that the information recorded in computer readable form is identical to the writen sequence listing has been furnished.

4. [X] The amendments have resulted in the cancellation of:

[X] the description, pages NONE

[X] the claims, Nos. NONE

[X] the drawings, sheets/~~fig~~ NONE

5. [ ] This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

*** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. statement

Novelty (N)	Claims	(Please See supplemental sheet)	YES
	Claims	(Please See supplemental sheet)	NO
Inventive Step (IS)	Claims	(Please See supplemental sheet)	YES
	Claims	(Please See supplemental sheet)	NO
Industrial Applicability (IA)	Claims	(Please See supplemental sheet)	YES
	Claims	(Please See supplemental sheet)	NO

2. citations and explanations (Rule 70.7)

Claims 1, 2, 8-10, 15, 25-36, 42 and 48-51 lack novelty under PCT Article 33(2) as being anticipated by Nanogen, Inc.

All of the particulars recited in the above claims are clearly disclosed in Nanogen, Inc. Specifically Nanogen, Inc. teaches [page 21, line 28-page 22, line 28]:" Fig. 3 shows a perspective view of a multichamber device. A frame 50 is formed,such as by milling or molding, one or more end sample chambers 56, sample chambers 58 and electrode chambers 52 having the functions and sizes described in connection with Fig. 2. The electrode 54, preferably exits the electrode chamber 52 and is connected via a connector 86, such as a threaded connector as is known to those skilled in the art. Adjacent sample chambers 56,58 are separated by a membrane holder 60. The membrane holder 60 optionally is formed of membrane holder halves 62 connected via connector 66. An opening 64 in the membrane holder is adapted to receive a material which differentiates or discriminates the passage of biological materials, such as a membrane or affinity material. The membrane holder 60 is adapted to matingly engage with holder 66. The sample chamber 56, 58 is in communication with the electrode chamber 52 via passage 68. In this embodiment, insert 70 threadingly engages with the frame 50 by threading 72 in receptive threading 74. A barrel 76 includes a counterbore 78 and includes holes 80 to permit passage from the electrode chamber 52 through holes 80, through the counterbore 78, to the sample chambers 56, 58... The membrane holder is removable from the frame 50. The membrane holder 60 may include membrane, mesh or beads with functional groups covalently linked to oligonucleotides. After material is captured within the opening 64 of membrane holder 60, the membrane holder 60 may be removed from the frame 50 and the materials transported to another site.". Specifically Nanogen, Inc. teaches [page 19, lines 4 & 5]: "DNA/RNA traps would especially include low density polymers (e.g., 0.5-3% agarose, or 5%-15% acrylamide) and PVDF.".

Claims 3-7, 11-14, 16-24, 37-41, 43-47, and 52-66 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest an apparatus for capturing an (Continued on Supplemental Sheet.)

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

CLASSIFICATION:

The International Patent Classification (IPC) and/or the National classification are as listed below:
IPC(7):G01N 27/00, 27/26, 27/447 and US Cl.:204/456,465,466,470,518,536,540,543,606,615,616,620,627

V. 1. REASONED STATEMENTS:
The report as to Novelty was positive (YES) with respect to claims 3-7,11-14,16-24, 37-41,43-47,52-66.
The report as to Novelty was negative (NO) with respect to claims 1,2,8-10,15,25-36,42,48-51.
The report as to Inventive Step was positive (YES) with respect to claims 3-7,11-14,16-20,37-41,43-47,52-66.
The report as to Inventive Step was negative (NO) with respect to claims 1,2,8-10,15,25-36,42,48-51.
The report as to Industrial Applicability was positive (YES) with respect to claims 1-66.
The report as to Industrial Applicability was negative (NO) with respect to claims NONE.

V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):
analyte comprising: a electrophoresis cassette including: a base having a pair of electrode chambers, a barrier interposed between the electrode channels, the barrier having at least one migration channel extending between the electrode channels, an enlarged slot bounded and opening into the migration channels, a first electrode extending in the first electrode channel, and a second electrode extending in the second electrode channel; a capture gel holder receivable in the enlarged slot, the capture gel holder having an opening aligned with the migration channel; and an evaporation cover for overlying the electrophoresis cassette, the evaporation cover having at least one opening for the capture gel holder and at least one opening for venting of gas. The prior art does not teach or fairly suggest an apparatus for capturing an analyte comprising: an electrophoresis cassette including: a base having a pair of electrode channels, a barrier interposed between the electrode channels, the barrier having at least one migration channel extending between the electrode channels, an enlarged slot bounded and opening into the migration channel, a first electrode extending in the first electrode channel, and a second electrode extending in the second electrode channel; a capture gel holder receivable in the enlarged slot, the capture gel holder having an opening aligned with the migration channel; a thin gel carried in the opening of the capture gel holder, the thin gel having a gel matrix and a ligand covalently bound to the gel matrix, and an evaporation cover for overlying the electrophoresis cassette, the evaporation cover having at least one opening for the capture gel holder and at least one opening for venting of gas. The prior art does not teach or fairly suggest a capture gel holder comprising: a handle; a plurality of teeth projecting from the handle, at least one of the teeth having a bore through the tooth, and a gel matrix and a ligand covalently bound to the gel matrix overlaying the bore. The prior art fails to teach or fairly suggest a method of detecting a target molecule comprising the steps of: providing a capture gel holder having a non-conductive polymeric material having a gel matrix comprising a covalently bound ligand; providing an electrophoresis cassette having a migration channel extending between a pair of electrodes and a sample well to receive the sample within the migration channel and a pair of elongated slots bounding and opening into the migration channel; inserting the sample with the target molecule into the sample well; inserting the capture gel holder into one of the pair of enlarged slots in the migration channel; passing a voltage in the electrophoresis cassette to cause the sample to migrate in the migration channel from the sample well towards the non-conductive polymeric material. The prior art does not teach or fairly suggest a method of detecting a target molecule comprising the steps of: providing a capture gel holder having a non-conductive polymeric material having a gel matrix comprising a covalently bound ligand; providing an electrophoresis cassette having a migration channel extending between a pair of electrodes and a sample well to receive the sample within the migration channel and a pair of enlarged slots bounding and opening into the migration channel; inserting the sample with the target molecule in the sample well; inserting the capture gel holder into one of the pair of enlarged slots in the migration channel; passing a voltage in the electrophoresis cassette to cause the sample to migrate in the migration channel from the sample well towards the non-conductive polymeric material; removing the capture gel holder from the electrophoresis cassette; placing the capture gel holder in a reader to detect a probe associated with the analyte; preparing the sample including having a reporter probe to adhere to the target molecule; stopping the voltage in the electrophoresis cassette; moving the capture gel holder to a wash station; inserting the capture gel holder into the other enlarged slot in the migration channel; passing a voltage through the electrophoresis matrix inn the electrophoresis cassette to cause the sample to migrate in the channel form the sample well away from the capture gel holder and the non-conductive polymeric material. The methods/devices would be useful for isolating biomolecules such as DNA.

---------- NEW CITATIONS ----------
WO 98/10277 A1 (NANOGEN, INC.) 06 September 1996 , see entire document especially the embodiment illustrated in Fig. 2 & 3.